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# China Report

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No. 56



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## CHINA REPORT

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I. GENERAL INFORMATION

ACADEMY OF AGRICULTURE PRESIDENT SPEAKS ON MODERNIZING AGRICULTURE

Hong Kong ZHONGGUO XINWEN in Chinese 12 Jul 79 p 2

[Article: "Jin Shanbao Talked About Modernization Problems in Chinese Agriculture"]

[Text] The well-known agriculture scientist, 83-year-old Jin Shanbao [6855 0810 1405], president of the Chinese Academy of Agricultural Sciences, talked about problems of modernizing Chinese agriculture. This was reported in a CHINA NEWS AGENCY Beijing dispatch on 11 July. He said that China's special characteristics need consideration when agricultural modernization is pursued in China. China has a large population but a comparatively small amount of arable land—with a per capita cultivated area of only 1.6 mou. This figure is only one-eighth of the United States value, one-seventh of the USSR value, or one-third of the French value. Although some virgin land can still be reclaimed in the future, yet the per capita cultivated field still cannot increase by much owing to the population growth. This situation means that agricultural growth in China should focus on increasing the per unit yield. The basic target of modernizing China's farms is to considerably raise the per unit crop yield, so that China can become a country with an overall high crop yield, worldwide.

Jin Shanbao said that agricultural growth depends strongly on scientific progress. In raising the unit yield, adopting modern science and technology is vital, including soil improvement, irrigation, rational fertilization, using good seeds, prevention and control of insect pests, reform of the cultivation system, and adoption of advanced cultivation techniques. Among these measures, selective breeding and propagation of good seeds are generally stressed by other countries. In China, the successful breeding of a number of high-yield, disease-resistant wheat varieties has effectively controlled once-widespread wheat stripe rust and stem rust. In the late 1950s and early 1960s, China was the first country to successfully breed high-yield dwarf rice and to fortify rice varieties tending to lodging and low fertilizer tolerance. These achievements greatly boosted rice yields. In recent years, successful breeding and propagation of hybrid rice varieties pioneered an approach of increased rice production. Hybridizing of rye and ordinary

wheat produces Octoploid Triticale: it has large ears, many grains, high protein content, resistance to lodging, and resistance against drought and infertile soil. So Octoploid Triticale is widely cultivated in cold, high mountainous regions of Southwest and Northwest China.

After Jin Shanbao described the current situation abroad as to the breeding of ideal stalk varieties, selective breeding of varieties resistant to insect pest and adverse environments, and development of quality seed breeding, he admitted that seed breeding in China lags far behind the advanced level abroad. Besides seed breeding, China also needs a good system of breeding quality seeds, overcoming the handicap of many, miscellaneous and confused varietal conditions, propagating quality varieties, regionalizing quality seed arrangement, standardization of seed quality, gradual specialization of seed production, and mechanized crop handling.

10424

CSO: 4007

STUDENT PROPOSES CHANGING CHINA'S FARMING SYSTEM

Beijing XINHUA in English 0711 GMT 3 Oct 79 OW

[Text] Harbin, October 3 (XINHUA)--A Chinese postgraduate student proposes fundamental changes to the traditional Chinese farming system of grain production to render it into a diversified economy of grain production, animal husbandry and forestry.

Chen Ping, of the University of Science and Technology, expressed his views in a paper which has caused much interest in Chinese agronomic circles.

It is Chen Ping's thesis that the traditional small producer's concept of "agriculture as grain production" has been the root cause of poverty and unrest in the country over the last two thousand years.

He questions whether China's single-farming system is appropriate in the context of the modernization of agriculture, and advocates the adoption of a new approach.

It is his view that over the past 2,000 years, China's agriculture has become narrower, where as West European countries and the United States kept to a mixed farming system. The value of the production of animal husbandry is greater than that of grain farming in these places, and only a small part of the population is engaged in agriculture, but is able to produce food of high nutritional value.

The paper maintains that the reckless cutting down of forests and encroachment on pasture land has completely undermined China's ecological system, resulting in soil erosion and deleterious changes in climate.

It suggests that in the long term, a diversified farming system should be developed not only on the loess highlands in northwest China, but also in all traditionally grain producing areas.



The paper notes that although the area devoted to grain production may decrease, total grain output in a given area may increase and a diversified economy may be developed if proper measures are adopted. Only in this way can ecological balance be restored and the agricultural outlook be changed, the student said.

The paper was discussed at an academic meeting on agricultural modernization in northeast China held in Harbin recently.

CSO: 4020

## RATIONAL USE OF LAND RESOURCES URGED

Beijing GUANGMING RIBAO in Chinese 17 Aug 79 p 2

[Article by the Soil and Fertilizer Institute of the Chinese Academy of Agricultural Science]

[Text] Cultivated land is one of the most important components of the land resources. It can provide us with grains, cotton, oil, sugar, vegetable and tobacco, various commodities and industrial raw materials. However, the agricultural production in many parts of this country could not yet do what the local circumstances dictate, e.g., plant according to the soil condition, cultivate according to the soil condition, fertilize according to the soil condition, irrigate according to the soil condition and improve according to the soil condition. As a result, many problems related to the soil resources of the cultivated land have cropped up. Some of the problems even became so serious as to significantly affect speedy development of our agricultural production. Some of the major problems are as follows:

### 1. Small Forest Coverage Causes Serious Soil Erosion

We all know that forests play a very important role in regulating weather and protecting soil. This point has been sufficiently proven by many progressive communes and brigades which have implemented "preserving soil by forest," "nourishing soil by forest," "promoting agriculture by forest" and "increasing production by forest." On the other hand, small forest coverage often results in loss of water and soil as a result of erosion by wind and water, frequent flooding and drought and infertile soil. Because of the relatively very small forest coverage of this country, a large area of desert is moving southward, invading farm land and turning the land into sandy soil. For example, in the Ih Ju League of Inner Mongolia Autonomous Region, during the period from 1957 to 1972, the total area of land which turned sandy has reached 18 million mu as a result of neglect in maintenance of the grassland and indiscriminate felling of trees. Similar situations exist in the southern part also. There were 12.95 million mu of primeval forest in Hainan Dao at the time

of liberation. Today, there are only 3.64 million mu. As a result, the disasters associated with flood, drought, wind and sand are becoming more and more severe each day.

Once the forest is destroyed, a serious loss of water and soil is ~~not~~ likely to follow. According to the statistics, there are still ~~over~~ 150 million mu of lost land in this country where the soil is becoming less and less fertile because the land has lost its fertile top soil to wind and water. Speaking of the water systems of Huang He and Chang Jiang alone, there is an equivalent of more than 6 million mu of fertile soil which is rolled off and carried away into the ocean every year. We cannot help but notice its seriousness.

## 2. Irrational Water Usage and Management Worsens Damage to Soil by Water

Irrigation is the vein of life of agriculture, and rational use of water is one of the indispensable measures for the improvement of soil. If water is not used rationally, e.g., irrigating without drainage, storing without discharge, flooding land with large quantities of water, using only the surface water and neglecting use of underground water, all these practices can cause deterioration of soil and turning it into low-yield land. In the northern part, irrational use of water often turned soil into secondary saline-alkaline soil. The presence of a large area of secondary saline-alkaline soil in the Hubei Plain is closely related to irrational use of water in the past. In the southern part, irrational use of water often turned soil into secondary bog soil and gley soil [3383 5148 0553]. As the underground water level rose, the air content of the soil decreased, the soil temperature dropped and the ability of the soil to release nutrients was diminished, which seriously affected the growth of crops. The presence of such bog soil and gley soil is quite widespread in the southern part and it is spreading quite rapidly. Speaking of Hunan Province alone, there are 18 million mu of bog amounting to 40 percent or so of the total cultivated land area. The drainage basin of Taihu and the Chaunxi Plain have suffered from water damage so much so that it is fast becoming one of the important factors that limit the development of the local agricultural production.

## 3. Heavy Use Coupled With Little Care Deplete Fertility of Soil

Practicing agriculture in combination with forestry and animal husbandry is an important road to rational application and protection of the land resources. For example, in an area of aeolian sandy soil, a land-protective forest can lighten the blow of drought and protect the land from wind. A forest developed on an eroded slope land can strengthen the capability of the land to hold water and soil. At the same time, triple combination of agriculture, forestry and animal husbandry can also improve the soil by producing a large quantity of organic fertilizer source material. But, some of the areas have emphasized production of grain crops so much as to neglect forestry and animal husbandry completely, neglecting establishment of grassland and management of forest. Some have even indiscriminately opened up grassland and forest for cultivation of grain crops.

As a result, the grassland and forest land have turned into saline-alkaline soil or become sandy or been washed away, and the devastating effects are strongly felt by the nearby cultivated land.

Planting green manure and crops of the pulse family is a tradition of this country which represents a good experience of well-balanced use and maintenance of land. But, some of the regions put too much emphasis one-sidedly on the pursuit of yield and practiced heavy use of land with very little maintenance, or using land without any maintenance at all, and allowed the area in which the green manure and the pulse family crops were planted to diminish dangerously. According to a preliminary study, in various southern provinces, the area in which milk vetch and *tecoma gradiflora* are planted has decreased from 126 million mu in 1972 to 115.78 million mu in 1977; a decrease of more than 10 million mu. The area in which soybean was planted has also greatly diminished in the northern provinces. For example, in the early years of liberation the area in which soybean was planted reached 30 million mu in Shangdong Province. By 1973, it was down to 11 million mu and the total soybean yield has also dropped from 3 billion jin to no more than 1.5 billion jin. In many regions, an increase in multiple crop index was not always accompanied by planting of the green manure and the pulse family crops. A decrease in organic fertilizer input was coupled with a significant increase in chemical fertilizer input. As a result, the cultivatable layer of soil became shallow, the organic matter in soil has been depleted, the soil turned hard, and the soil fertility diminished day by day.

According to the agricultural development plan of this country, 800 billion jin of grains and 72 million dan of cotton are to be produced by 1985 together with a significant increase in other cash crops. In order to achieve this goal, a certain quantity and quality of land must be available, or else it will be very difficult to contemplate success. However, in addition to the various problems cited above, the land resources of this country appear to be diminishing during the past 20 years. It is down to only approximately 1.5 billion mu today. Moreover, more than one-third of the total area of cultivated land today belongs to the low-yield soil. The so-called low-yield soil includes for example, the semi-arid or arid saline-alkaline and aeolian sandy soil in the northern provinces, the red-yellow acidic infertile soil, and the low-yield paddy soil in the sub-tropical and tropical regions, and the bog soil, heavy clay and eroded soil which are scattered all over this country. These kinds of soil can yield only approximately 100-200 jin of grain crops per mu or even as low as only several tens of jins. These kinds of soil constitute one of the greatest obstacles to the realization of modernized agriculture. Many regions have, since liberation, adopted various measures for the treatment of these low-yield soils, including such measures as "group diagnosis" (joint investigation and research by many branches of sciences) and generalized treatment. For example, the Panjin region of Liaoning Province achieved a per mu yield of rice reaching 700 jin on 1.6 million mu of land by improving the coastal colonchak. The Jinhua region of Zhejiang Province achieved, in the very first year, a per mu yield of rice reaching 1,000 jin

on more than 70,000 mu of land reconstructed from red soil slope land. Turpan County and Pishan County of Xinjing have treated a large area of aeolian sandy soil land and obtained some results. However, the interference and destruction brought about by the "gang of four" in past years coupled with insufficient understanding of the natural law and use of inappropriate measures brought local deterioration of some of the reclaimed low-yield lands. Some reverted to saline-alkaline soil, sandy soil, bog soil or gley soil. Therefore, it is imperative that improvement of the low-yield soil be carried out rapidly and in earnest, and it must be done thoroughly.

So that we may be able to rationally utilize the land resources of this country in the future by continuously improving the soil fertility and by avoiding destruction of the biological system of the land resources often brought about by indiscriminate cultivation of the grassland, felling of the forest and improper use of the land, we consider it essential that a "land resources protection law" be written. The law should cover such subjects as water and soil conservation, prevention of soil pollution, reclamation of wasteland and policies and measures related to the reformation of farming regulations. We further suggest that a special organization be established either by the National Agricultural Commission or the Ministry of Agriculture and other departments concerned to be responsible for the investigative work. At the same time, we must strengthen the surveying and planning of the land resources. We must dig deep into the core of the problem and study the biological system of farm land and the problems related to the soil fertility and thus guide the development of the agricultural production of this country.

9113

CSO: 4007



JAPANESE VIEWS ON CHINESE AGRICULTURE AIRED

Beijing GUANGMING RIBAO in Chinese 16 Aug 79 p 4

[Article: "Some Views on the Modernization of Chinese Agriculture From the Observation Group of the Japan-China Science and Technology Exchange Association That Went to Taoyuan [2711 3293] County, Headed by Saburo Tamura [3944 2625 0005 6745] with Delegates Toru Adachihara [6398 4539 0626 6306] and Wataru Kasugabara [2504 0626 0065]

[Text] Three Japanese friends, Saburo Tamura, famed professor of Tokyo University; Toru Adachihara, professor at the University for Short Courses in Technology in Toyama Prefecture [1381 1472 4905]; and Wataru Kasugabara, assistant professor of the Agriculture Department of Tokyo University, inspected the agricultural situation in Taoyuan County in Hunan Province at the invitation of the Chinese Academy of Sciences between 25 and 31 May of this year. They have written an article titled, "Report of Observations of the Agricultural Situation in Taoyuan County," which puts forward some candid views and suggestions on the modernization of agriculture in China. Some excerpts from this report are published here. The Editor.

What is the modernization of Chinese agriculture? Chinese friends have often been heard to say, "China's agriculture is between 20 and 30 years behind Japan's," and "China lacks machines and chemical fertilizer." Possibly so. We are not saying that farm machines and chemical fertilizers are not necessary to modern agricultural management, but isn't the value placed on these things by our Chinese friends somewhat misplaced?

Many people in China believe that the mechanization of agriculture is synonymous with the modernization of agriculture. We are of the view that the basic objective of the modernization of agriculture lies in the establishment of a system of farming techniques that is able to satisfy fully and consistently the supply to all of the people of their needs for agricultural products. To this end, it is necessary, first of all, to increase average yields per unit of area and secondly, to increase the

average harvest yields of the labor force. For these purposes, reforms in technology become the object of struggle. Mechanization is one important method for the attainment of this objective, but it is not absolutely indispensable. Depending on differences in form and content of agricultural processes, effective use of existing manpower and animal power can also bring about excellent results. It is hoped that on the basis of the above perception, improvements in current farming techniques will be considered.

There is one aspect to Chinese agriculture that is backward, and another is enviable in the extent of its advancement. In Taoyuan County, where pig raising is a major enterprise, the measures used to convert agricultural refuse into fodder and the practical processes for recycling methane gas, manure, and urine for return to the fields deserve the highest commendation. Additionally, the cultivation over wide areas of Chinese milk vetch (*Astragalus sinicus*) for use as green manure has not been done in Japan, which henceforth should learn anew from China. It is earnestly hoped that the Chinese people will build a modernized agricultural system on the foundation of traditional farming techniques, will rapidly achieve self-sufficiency in grain production, and go on to become the granary for Third World countries anxious about the prospect of starvation.

**Criticism of Multiple Cropping.** The most important task of modernized agriculture in the production of agricultural products to satisfy to the full the needs of the people is, of course, the production of staple cereal grains. At the same time, agriculture must also raise other farm products in addition to cereal grains such as vegetables, orchards, animal fodder, and crops for use in making handicrafts. Grain production cannot be accorded a lopsided emphasis. The most outstanding manifestation of a lopsided emphasis on grain production is multiple cropping. In order to rectify this state of affairs, verifiable study of the following problems must be carried out:

1. Does the use of varieties that mature extremely early as a means of shortening the growth period for single crops or double crops of rice really bring benefits in high yields?
2. Multiple cropping may create irrational cropping seasons with exposure to low temperatures of both seedlings planted for an early rice crop and grain maturing in the second rice crop with the consequent possibility of a drop in yields. In addition, if wheat and other winter crops are sown or transplanted late, chances are good that they will suffer from a freeze. Looked at from the standpoint of overall yields, is multiple cropping unqualifiedly advantageous?
3. Multiple cropping may deplete soil fertility. Can multiple cropping in Taoyuan County and other areas maintain high yields over a long period of time?

Taoyuan County has changed from a three-crop system of "rice-rice-wheat" to crop rotation of "rice-rice-green manure" with consequent increases in grain yields. It is to be hoped that in future coordinated study will be conducted on the pairing of various other crops with two crops of "rice and wheat," on the maintenance of soil fertility, and on the selection of cultivated varieties. It is also to be hoped that consideration will be given the physical features of the terrain and condition of the soil (whether wet or dry fields) to establish through experience a planting system that brings high and stable yields.

**On Current Deep Plowing Practices.** Generally speaking, deep plowing must be combined with techniques for nurturing soil fertility to the full with large amounts of compost used together with sunning of the fields to raise their fertility if yields are to be increased. But the quantity of compost presently used in Taoyuan County seems slight, and farmers, moreover, undertake deep plowing when the soil is wet. Whether such practices make any real sense for increased yields deserves to be viewed with suspicion. Furthermore, farmers plow and harrow three times each year, making a virtual mire of the fields. This not only wastes manpower but deteriorates the physical structure of the wetlands. When fields of low fertility are deeply plowed, available nutrients are dispersed throughout the soil bringing a decline in fertility.

**On the Fertilizer Question.** In Taoyuan County there is an absolute insufficiency of fertilizer for fertilizing. But in view of the situation throughout the country, study must be given as to how most effectively to use limited amounts of fertilizer.

1. **On organic fertilizer.** Use of compost requires accurate mastery of the amount of organic material to be used as well as a scientific analysis of the whole process of how compost becomes effective in the soil. There seems to be some room for study as to whether green manure and Chinese milk vetch can best be used directly on the soil, as at present, or whether a composted mixture of rice and wheat straw is best, or whether the rice and wheat stems should be best ensilaged as fodder for animals, with the barnyard manure that results being used as fertilizer. In Taoyuan County, most barnyard manure is composted in the open air. If some simple shelter or covering could be added, the potent portion of barnyard manure could be prevented from running away with the rains. At the present time, much rice and wheat straw is consumed as fuel. Possibly this is unavoidable inasmuch as the supply of fuel in the area is inadequate. But, in the future, once forestry and coal mining have developed, thought must be given to returning to the soil the maximum amounts of agricultural wastes.

Generally speaking, Chinese scientists and technicians acknowledge more often than not that the use of composted manure and other organic fertilizers "lags behind the times," but we feel this is "mistaken modernism." Actually, much remains to be clarified about the use of organic fertilizer, but its use cannot be ruled out. Most agricultural scientists and technicians in Japan believe that composted barnyard manure is indispensable

to increased soil fertility and stable crop yields. In recent years, Japan has resorted to large applications of chemical fertilizers in order to save manpower with consequent decline in soil fertility and an increase in the amount of barren land. This is a matter for deep concern.

2. On Chemical Fertilizers. Taoyuan scientific workers and farmers alike say that chemical fertilizers are insufficient for needs and this is, in fact, the case. Methods of using chemical fertilizers must be subjected to very close experimentation. Chinese scientific workers have insufficiently evaluated the usefulness of ammonium bicarbonate fertilizer produced by small local plants. China alone produces this kind of fertilizer, which is not as good as urea fertilizers and possesses the additional drawback of being chemically rather unstable. But we believe there must be a full perception of the social, economic, and technological constraints impelling the production and use of ammonium bicarbonate as a fertilizer in China, and there must be serious study of how best to use and handle this fertilizer for current agricultural production. We earnestly await the cooperation of China's agricultural scientists and technicians with the farmers to augment organic fertilizers with the minimum amounts of chemical fertilizers, and to create an independent fertilizer technology that will become a model for agriculture throughout the world. This technology is interrelated with the creation of an agriculture whose objective is not to destroy the ecological system.

On the Mechanization of Agriculture. We believe that the promotion of the mechanization of agriculture must definitely assist the development of productive forces. But in Taoyuan County, scarcely any leeway exists for adapting mechanization to increase the cultivated area. Furthermore, there seems little possibility of either increasing the rate of land use or of raising productive forces there through the introduction of machinery that shortens the harvest period, the period for preparing the soil for planting, or the time required to plant crops. Thus, in Taoyuan County the mechanization of agriculture can only play a role in reducing the amount of hand labor. But in this county as well as in other cities outside the county, there are scarcely any enterprises able to absorb this surplus labor. Possibly the same set of circumstances exists in every part of China.

Looking back, the process of agricultural mechanization in Japan following World War II took place during the latter part of 1960, when a policy of rapid economic growth was inaugurated. Because of the dramatic increase in demand for industrial labor that took place, agricultural mechanization followed from the large-scale absorption of labor from rural villages. Mechanization of agriculture in Japan was, moreover, principally of benefit to industry. The main objective adopted--increased agricultural production--required a parting with the agricultural techniques of the past to obtain rapid development. This led, in consequence, to an actual large-scale decline in productivity. In the case of paddy rice, for example, the widespread use of rice seedling transplanting machines brought an



advance in the date when seedlings were transplanted. This gave rise to difficulties in the later sowing of wheat for double cropping, with the result that a nationwide homogeneity in wet lands was created. Concurrently, the relationship between livestock and paddy fields and between compost and paddy fields was completely severed. Because of the introduction of European and American style machines and the promotion of mechanization in the cultivation of large fields, farming methods were made to suit the machines, with a loss of the traditional intercropping methods that had been used. This led to a consequent decline in the intensity of cultivation of fields and a large drop in the productivity of large fields. The Chinese people should have an accurate understanding of what mechanization means before carrying it out. At the same time, they must carefully study its relationship to the current situation of supply and demand in steel and to the employment of capital.

In China, a redistribution of the labor force will accompany the future development of various industries. Concretely stated, the labor force will be transferred from agriculture to industry. When that time comes, it will be necessary to remember constantly not to sacrifice agriculture and not to promote agricultural mechanization if it is to reduce agricultural productivity. Particular attention should be given study to develop those machines that fit in with traditional Chinese agronomy and that can bring about further development. Even if some seedling transplanting machines and harvesting machines may be imported from Japan or from other countries, it seems very doubtful, based on our observation of the situation of agriculture in Taoyuan, that they can play much of a role. To accommodate Chinese agriculture to farm machines constructed in foreign countries should positively not be the direction in which China strives to go.

An Assessment of Japanese Hothouse Horticulture [6080 2457 0954 5669]. Hothouse agriculture is frequently regarded as the use of basic research on plant physiology and the ecology for the development of both equipment to regulate environment and technology to regulate reproduction--in short, a symbol of modern agriculture. Everywhere in China can be heard the cry for active introduction of Japanese hothouse agricultural technology. But is it, in fact, a technology to which socialist China should give priority for introduction? Because of the development of hothouse horticulture, watermelon is available in Japan for the 5 months of April through August, and vegetables such as tomatoes and cucumbers may be bought almost all year round. But large amounts of assets are required to set up such a system, and maintenance of internal environmental conditions requires the expenditure of large amounts of fossil fuels. The relationship between the psychology of consumers who, in seeking to divorce themselves from the seasons regard anything that is scarce as precious, and the farmers who capitalize on this psychology to sell agricultural products at high prices, is something that can be permitted to exist only in a capitalist society. Moreover, in the process of developing hothouse horticulture in Japan, crop diseases and physiological obstacles have been on the rise and are beginning to threaten the foundations of the existence of hothouse agriculture.



On Putting to Rights Some Basics to Farming. In Taoyuan County, irrigation ditches and the division of fields into sections are already quite advanced, but in some areas fields can be seen where drainage is poor. Some means for drainage must be provided for these poor fields in order to increase their productivity and decrease the labor used on them. But when drainage work is undertaken, the drying of the fields will promote decomposition of organic matter in the soil. Thus, it is necessary to provide a plan for appropriate organic supplements while at the same time changing crop cultivation methods. In short, drainage and irrigation of farmlands directly relates to the basics of agricultural production--the soil base--and so its relationship to the total agricultural system must be clearly recognized. Only in this way can a change be made from low yield wet fields to dry fields of stable yields.

#### Deciding on Approved Varieties and Breeding Objectives

The process of development of farming techniques in Japan between the end of World War II and the decade of the 60's may be roughly divided into four stages: 1) emphasis on drainage and irrigation engineering to put to rights the very foundations of farmlands, putting the land in good condition, and improving the soil; 2) setting up techniques for the application of fertilizers; 3) setting up techniques for plant protection; and 4) promotion of mechanization.

Against the background of development during these four stages has been a concurrent development of improved varieties, because only when improvement in varieties takes place can further progress be made in farming techniques. Breeding of a new variety cannot succeed within a short period of time; it must be an arduous long-term undertaking requiring painstaking study. In order to bring about a modernization of agriculture in China, the outline of varieties that will be required in future must first be envisaged and breeding goals set. If this conception is botched, an irreversible situation may be created. That is to say that at the time breeding goals are set, an estimate must be made on the state in which Chinese agriculture will be 10 or 15 years hence. Thus, not only the views of agricultural scientists and technicians but the comprehensive views of all quarters must be heard to make a prudent judgment.

Once breeding work is underway, there must be, in addition to an organization for breeding new varieties, a special agency to organize experimental plantings of varieties under different conditions prevailing in various regions throughout the country and to assess which varieties should be adapted for general use.

On the Interrelationship Among Agriculture, Forestry, the Livestock Industry and the Fishing Industry. China has now corrected its former extreme leftist policy of overemphasis on grain production. Under the guidance of a policy of "total development, with grain as the key link, there has been a simultaneous development of agriculture, forestry, the livestock

industry and the fishing industry. The situation in Taoyuan County can serve as a model. But, generally speaking, there is need for development of specific industries on the basis of geographical conditions in different areas, and for appropriate adjustments in specific industries. Agriculture and forestry are greatly interrelated, but since the time required to grow forests is rather long, early coordination with agriculture is necessary.

In Taoyuan County, agricultural production, pig raising, and fish hatching are nearly perfect, but any large increases in production are virtually impossible. We feel that since the current emphasis is on development of all kinds of grain production including production of crops for cattle fodder, the emphasis of scientific and technical research should also be placed on these things. The mechanization of feeding equipment inside pig barns must be regarded as a related but minor technology. Japan's livestock industry depends entirely on imports from abroad for its animal fodder, and is divorced from agriculture. The business-like process of large-scale feeding of livestock has brought in its wake environmental pollution, "livestock pollution," and various social and economic problems. We hope that when our Chinese friends examine our country's livestock industry they will not be beguiled by the modern equipment but look behind the scenes at the many problems that exist.

As regards the combined problems of the forestry and livestock industries in Taoyuan County, once the forests have been created, forage grasses or plants of high value for forage may be planted on the forest floor after a time, and cattle and other domesticated animals can also be pastured in the forest. If the management system for grazing animals is proper, the prevention of erosion in the forest and an increase in soil fertility can accompany the raising of animals. Further, methods suited to separate areas may be implemented to raise breeding stock and meat animals, with breeding stock and young animals grazing in the forests while meat animals are fed forage grown elsewhere with future benefits for development of the livestock industry.

9432

CSO: 4007

LACK OF CONTROL OF HOG, CHICKEN DISEASES DEPLORED

Beijing GUANGMING RIBAO in Chinese 11 Apr 79 p 4

[Letter to the Editor: "Attention Should Be Paid to the Control of Hog and Chicken Diseases"]

[Text] Comrade Editor:

We went to the countryside and saw with our own eyes that the domestic side occupations of commune members were getting on very well. Everywhere chickens and ducks moved about in flocks and pigs filled pigsties. But the peasants were worried. They were afraid of an outbreak of hog cholera or chicken pest. There was an outbreak of chicken pest in a place. Following this, the surrounding areas, from several li to over 10 li distant, met with the same disaster and farmers watched with eyes wide-open flock after flock of their chickens and ducks die. Then there was a brigade consisting of slightly over 100 households. Fifty-eight of their pigs of all sizes died from a disease within half a year. On the main street of the town, farmers often could be seen carrying their pigs to the veterinary station to have their disease diagnosed.

Why cannot diseases be controlled in time? Comrades who perform veterinary work say: One, shortage of funds. Two, shortage of drugs. Three, shortage of hands. The spring and autumn control work being carried out year after year is only for appearance's sake. Some communes and brigades still have not been furnished with their full complement of veterinary personnel. Essential drugs, such as penicillin and streptomycin, are also very difficult to buy. How can the lives of domestic fowls and animals be safeguarded? Peasants want very badly for the departments concerned to solve for their domestic fowls and animals the question of shortages in drugs and veterinary personnel and to grasp effectively the work of controlling the plagues of animals and fowls.

Chen Huiming [7115 1920 2494]

7682  
CSO: 4007

## RAISING OF MILK COWS, MOUNTAIN GOATS URGED

Beijing GUANGMING RIBAO in Chinese 11 Apr 79 p 4

[Article by Lu Yaohui (7120 5069 6540), Inner Mongolia College of Agriculture and Animal Husbandry, Department of Animal Husbandry: "Promote Milk Goats Vigorously"]

[Excerpts] To develop animal husbandry, it is also necessary to make arrangements in a manner appropriate to local conditions. In minority areas where pigs are tabooed, milk cows and mountain goats may be promoted. In places with small villages and a small population and where land is limited, milk goats may be raised. In most other areas, pigs and cows, or pigs and goats, may be promoted simultaneously. Milk goats have a higher economic value than pigs. Pigs consume feed, while goats eat grass. In regard to cellulose, the digestive power of pigs is only 18 percent, while that of goats may reach 60 percent. Therefore, all wild grasses and wild vegetables that pigs eat, goats can eat. They also can directly pluck tree branches and leaves, weeds, and crop residue for eating.

In our country, distributed among the agricultural areas are miscellaneous pieces of uncultivated land of different sizes, and their total area may reach over 1.4 billion mu. This land is not fit for tillage either because slopes are too steep or because the soil is too gravelly, but it grows forage plants in abundance and is a good place to raise mountain goats for the production of milk. Some people say that mountain goats will gnaw at trees and ravage growing crops. But man is the determining factor in doing things. In Shaanxi Province, some places have adopted the method of raising goats in different households either by tethering them to a post or by confining them to a fold. A household may be assigned two or three goats for raising. When the commune member goes out to work, he brings a sickle. After work is done, he cuts and brings back home a bundle of grass. And that solves the question of feed.

Raising milk goats requires little investment. Multiplication is fast, results are considerable, and profits are high. Folds for goats are simple to build. One year from its birth, a ewe may be used immediately for breeding. The gestational period is 5 months. It begins to produce

milk as soon as it drops its young. Each litter consists of one to three offspring. The reproduction rate may reach 150 to 180 percent. A mountain goat of a good stock, like the Shaneng [3097 5174] species, secretes milk for a period as long as 10 months. On an average, it produces 5.5 jin of milk daily. Computed on the basis of 305 days in a year, it may produce a total of 1,677 jin of milk. The daily mean milk yield of an individual ewe of superior quality may reach 7.2 to 9.0 jin. This means that it can produce 2,196 to 2,745 jin of milk during one secretory period.

The contents of nitrogen, phosphate and potassium in goat manure and urine are relatively high. The manure accumulated from one goat in a year should be enough to be applied to a 1,000-jin mu of land, and its effectiveness may last 3 years. Besides, it can keep surface soil from alkalinity.

In recent years, the raising of milk goats in Shaanxi Province has been extended to dozens of counties, and the total number of milk goats in the province has topped 370,000. In the county of Fuping alone, over 80,000 milk goats are being raised. The dairy products processing plant run by the county turns out more than 600 tons of powdered milk and condensed milk annually. Still there is a big surplus of fresh milk. Raising goats for the production of milk is also being developed rapidly in the Loyang Prefecture of Honan Province. In our country there are many areas similar to Shaanxi and Honan or with conditions even better than those two provinces. For example, there are the agricultural areas and semi-agricultural and semi-pastoral areas of Inner Mongolia, Huhehot Municipality, the suburbs of Baotou Municipality, Jining Prefecture and its neighboring banners (counties), where historically it was the custom to raise milk goats. In other provinces there are a number of places with the same favorable conditions. They also can develop raising of milk goats on a large scale. The key is that the leadership should attach importance to it.

7682

CSO: 4007



AGRICULTURAL MINISTRY BANS FROG-CATCHING, SELLING

Beijing GUANGMING RIBAO in Chinese 25 Aug 79 p 1

[Article: "Notice by Agriculture Ministry Prohibiting Frog-Catching and Selling To Preserve Frog Resources"]

[Text] A recent Ministry of Agriculture announcement prohibits catching and selling frogs throughout China, as reported by a NEW CHINA NEWS AGENCY Beijing dispatch on 24 August. This action aims at preserving frog resources. As the notice stated, frogs were used to eliminate crop pests with good effect in some areas of Guangdong, Zhejiang, Fujian, Hunan and Hubei. Insect control with frogs can not only slash pest infestation, increase crop yields and reduce production costs, but also lessen insecticide pollution and protect other natural enemies of insect pests. Employing frogs in this way is an important way to protect crops and expand farm production. However, the failure to adequately see how important it is to protect frogs in some areas results in a growing number of incidents of frog-catching and killing. Frogs were sold in large numbers in farm produce markets and state-operated markets of subsidiary foodstuffs in Beijing, Guangzhou and other cities. In some regions, production teams organized peasants to catch frogs to be fed to chickens and ducks. As a result, agriculture-related departments and newspapers received many letters from the masses asking a halt and a ban on these incidents.

The announcement continued, "This is the season when frogs of different varieties devour insect pests in large numbers, so it is also an important time for frog protection." Extensive publicity and education needs to be seriously carried out among the rural commune members and masses as well as city residents so that peasants do not catch frogs and city dwellers do not eat frogs. The market administration should be so strengthened that selling and buying frogs is prohibited at markets. The government may make announcements prohibiting frog catching as well as frog selling. When a field is drained, dried, or treated with chemical fertilizer or insecticide, the right measures must be taken to protect frog resources; these measures include digging water-storage ditches, applying granulated chemical fertilizer or high-effect but low-toxicity insecticides, increasing the water

layer in paddy fields, and lowering insecticide or fertilizer concentrations. For Beijing, Tianjin, Hunan and Guangdong (four provinces, municipalities) that are permitted to export frogs, the 30 September 1963 stipulation of the Agriculture and Foreign Trade Ministries is still in effect; the stipulation says that foreign trade divisions are to organize planned frog purchases while prohibiting free market sales of frogs.

10424

CSO: 4007

## BRIEFS

**MISUSE OF TRACTORS DEFENDED**—In recent years, people saw many tractors regularly performing transportation tasks. They criticized this as "performing the wrong task" and called upon the "iron buffaloes" to return to the fields. These "iron buffaloes," however, refused to obey. Should the peasants be blamed for this? The price of 1 tractor is equal to that of 10,000 jin of grain. Equipped with only a few accessories, it can work in the fields only for a small number of days during the four seasons of a year, thus remaining idle most of the time. Under this situation, how can the peasants avoid finding some other uses for the tractors? Moreover, the shortage of trucks for farm use has been very acute. What else can be used for the transport of grain, coal, bricks, tiles, lumber and rocks if the "iron buffaloes" were not used? It is clear that calling upon the "iron buffaloes" to return to the fields and leveling criticism alone would not solve this problem. To have them doing the right task, departments concerned must first of all create the proper conditions by providing all the needed accessories and by sending trucks to rural areas. Signed: Yuan Bi of Beijing. [Text] [Beijing RENMIN RIBAO in Chinese 13 Jul 79 p 2]

**CAMELLIA OLEIFERA ACREAGE EXPANSION**—The Chinese Forestry Society has suggested that the total area planted to camellia oleifera be expanded to 100 million mu within the next 5 years to produce 5 billion jin of edible oil annually to ease the acute shortage of edible oil in China. Currently China has more than 50 million mu of camellia oleifera. [Beijing GUANGMING RIBAO in Chinese 7 Aug 79 p 2]

**GOOD OILSEED HARVEST EXPECTED**—According to reports from various areas, China's autumn-ripened grain and oil-bearing crops, totaling more than 1 billion mu, and accounting for two-thirds of China's annual output of grain and oil-bearing crops, are growing better than for many years. The paddy rice, sorghum, maize and millet crops all show signs of good harvest. [Beijing RENMIN RIBAO in Chinese 19 Sep 79 p 1]

CSO: 4007

PROVINCIAL CONFERENCE DISCUSSES AGRICULTURAL SURVEY, ZONING

Hefei Anhui Provincial Service in Mandarin 1100 GMT 17 Sep 79 HK

[Summary] An Anhui provincial conference on surveying agricultural natural resources and on agricultural zoning was held in Hefei from 8 to 12 September, attended by 115 persons concerned from all parts of the province. Wang Guangyu, secretary of the provincial CCP committee, spoke. The conference discussed and formulated draft plans for surveying agricultural natural resources and conducting research into agricultural zoning for the period 1979-1985.

The conference recalled that various surveys of agricultural natural resources had been carried out in Anhui from 1953 up to the time of the cultural revolution, when all this work was negated and the materials and data collected were burned. New achievements have been scored since the "gang of four" were smashed, and especially since the party Central Committee solved the leadership problem of the provincial CCP committee. However, many problems still exist. Some areas and departments fail to attach sufficient importance to the work, while research methods of others are backward and a professional force has not been organized. The province should get a good grasp of the following tasks this year and next:

"1. Survey land resources.

"2. Carry out a comprehensive survey in areas where there are currently many problems in the exploitation of resources and there is strong competition for land between agriculture, forestry and animal husbandry reach correct evaluations, put forward scientific proof for the measures to be carried out, and formulate plans for solving the problems.

"3. Carry out a universal survey of soil resources.

"4. Carry out a scientific survey of nature reserves which have been or will be set up, and put forward plans for the arrangement of such reserves and plans for protecting rare and valuable animals and plants.

"In agricultural zoning, we must follow the demands of the state and put forward initial plans for comprehensive agricultural zoning in the whole province and for agricultural mechanization zoning within 1 or 2 years. By 1985, we should formulate agricultural zoning plans for each county, and also put forward rational suggestions and scientific proof on questions such as rationally readjusting production arrangements, setting up commodity grain bases, improving the cultivation system, and fixing the orientation for the technological reform of agriculture."

To fulfill these tasks, the conference demanded that the revolutionary committees at all levels grasp resource survey and agricultural zoning as an important task for speeding up the development of agriculture and gradually modernizing agriculture, set up special organs to grasp the work, and properly implement all the tasks. "The provincial agricultural natural resources survey and agricultural zoning committee was established in July with the approval of the provincial CCP committee. The counties should set up corresponding organs. The prefectural administrative offices need not set up special groups for this work, but they must actively support and help the work of the provincial agricultural natural resources survey and agricultural zoning committee, and check up on and provide guidance for the counties under their jurisdiction in fulfilling their set tasks on schedule."

CSO: 4007



'XINHUA' INTERVIEWS BEIJING OFFICIAL ON PEASANTS' MARKETS

Beijing XINHUA in English 0203 GMT 21 Sep 79 OW

[Text] Beijing, September 21 (XINHUA)—Thirteen peasant markets have been set up on the outskirts of the city of Beijing and more will be added near the city centre, a spokesman for the city's industry and commerce bureau told XINHUA today. The 1500 stalls laid out every day offer some 80 varieties of farm products, mostly fresh vegetables, fruit, eggs, hens, peanuts and tobacco. Its vegetable supply equals nearly one-tenth of the state market supply.

These markets did more than two million yuans worth of business in the five months between March and July. This is about 0.133 percent of the city's total retail sales. The spokesman said all farm and byproducts produced by the peasants can be sold at these markets. Prices are agreed upon between buyer and seller. Usually they are a bit higher than in the state stores. Some may be sold at twice or three times the state price for a while but prices then drop. In general there have only been minor fluctuations. For instance, eggs sold at 1.6 yuan per catty when they first appeared in the markets in winter. Now they sell at 1.1 yuan per catty, as against 0.9 yuan in state owned groceries. Peasants who come here pay a fee varying from 0.3 yuan to 3 yuan every day according to the quantity of produce being sold.

Referring to the term "free market," used by some Western correspondents, the spokesman pointed out that the term was not really accurate. They operate under regulations and are in appointed places. Trading has to be fair. Cheating, speculation and profiteering is punished. Only farm and byproducts are allowed, and unclean, rotten food is prohibited. The use of coupons as a means of exchange is also forbidden. Between three and ten management personnel are assigned to each market to acquaint the peasants with the various regulations. Offenders are criticised, sometimes fined or their goods confiscated. To date, there have been 900 offences, an average one offence every two days in each market.

Manager Bai Xicun of Bei Tai Ping Zhuang market, one of the biggest, described his market as a centre for peasants from Beijing suburbs as well as from more than 30 neighbouring counties in Hebei Province. More than 500 stalls are laid out here every day, with some 6,000 sellers. Production

brigades and teams also bring their surplus goods to the markets after fulfilling state purchase quotas. Twenty letters from both urban inhabitants and peasants reached the city bureau in the first five days of September supporting the re-opening of these markets.

CSO: 4020

BRIEFS

GRAIN & SUGARCANE PRODUCTION--The Pearl River delta in Guangdong is a rich grain [mainly rice] and sugarcane producing area of China. Its output of marketable grain is high. For instance, the amount of marketable grain from the four counties of Zhongshan, Dongguan, Nanhai and Xinhui in 1976 was sufficient to support a city with a population of two million. This area is very suited to sugarcane cultivation. The period for sugarcane cultivation is 11 months in a year. Over 30 percent of the farmland in this delta is planted to sugarcane, and the yield is about ten thousand jin per mu. The sugar refining industry also has achieved rapid development. In Foshan Prefecture, for example, there are 6 large refineries with a daily sugarcane processing capacity of over 1,000 tons each, 12 medium sized refineries with a daily capacity of over 300 tons each, and more than 120 small ones. This prefecture's sugarcane processing capacity is now more than 3 times that of 1949. [Beijing DILI ZHISHI in Chinese No 4, 1979 p 2]

CSO: 4007

# REFORM OF FARMING SYSTEM IN BEIJING SUBURBS PROPOSED

Beijing GUANGMING RIBAO in Chinese 16 Aug 79 p 4

[Article by Zhang Zhongxing [1728 0022 5281] of the Fangshan [2075 1472] County Institute of Agriculture, Beijing Municipality: "Farming System in Beijing Suburbs Must Be Reformed"]

[Text] The developing discussion about the problem of the farming system in the suburbs of Beijing serves the purpose of promoting study of reform of the farming system in the suburbs of Beijing. I feel that the system of three sowings and three harvests in the Beijing suburbs is flawed and should be reformed.

Almost 8 years have passed since 1972 when three plantings and three sowings (also known as the old three sowings and three harvests system) was promoted for the rotational cropping of wheat-maize-gaoliang (or maize) on rectangular plots 3 and one-half chi wide. Though this system of farming has served a definite historical function in increasing yields, leading Beijing municipal farm organizations have made this the sole planting method for increasing production in the Beijing suburbs during the past several years. Once experiments were successful in a minority of places where conditions were relatively favorable, they were extended elsewhere through the method of organizing a system to "solve all problems with one stroke" that was contrary to the experiments and to demonstrations, and violated the principles of extension by stages and adaptation to local conditions. Consequently, many places saw increased production with no increase in income or even decreased production and decreased income. I am of the opinion that the heart of the controversy about the farming system in the Beijing suburbs lies in "solving all problems with a single stroke," and "appropriate reforms in planting according to local conditions." Why is it that we cadres and commune members in the Fangshan County communes and brigades seek appropriate reforms in planting according to local conditions?

1. The old system of three sowings and three harvests, namely the farming system of wheat-maize-gaoliang (or maize) produced increased grain yields in summer and reduced grain yields in autumn with a definite limit to

increased yields for the entire year. The average annual summer grain yields during the 5-year period 1973 to 1977, which were years of three sowings and three harvests, showed an increase over 1970 of 60.81 million jin, while the average annual autumn grain yields decreased by 37.26 million jin. After increases and decreases were balanced out, the total average annual yield showed an increase over 1970 of 23.55 million jin with an average increase per mu of 45 jin, or a 1.5 percent increase. The principal reason for the increase was the expansion of the area sown to wheat and improvements in the production conditions. During these 5 years, per mu applications of chemical fertilizers throughout the county were double the 1970 figure. Motor-pumped wells and pumping stations increased by 2000, irrigated land expanded by 70,000 mu, and tractor horsepower increased 6-fold. Furthermore, more than three-fourths of the chemical fertilizer and more than 85 percent of the water conservancy and capital construction projects for farmlands over the years were for the benefit of summer grain production. The tractor-plowed and tractor-sown wheat area accounted for more than 90 percent of the total, and this too accounted for improved quality and assured planting at the right time. Consequently, I feel that the increased production of grain during summer derived principally from both tremendous improvements in production conditions and the hard work of commune members, and that the system of three sowings and three harvests played no great role in this increased production.

Why do decreases in autumn grain production take place year after year under the 3 sowings and 3 harvests system? Many years of experiments show that the area planted to maize as a second crop is small, the number of plants few, and the stalks per mu numbering only about 60 percent of former yield. Furthermore, 2 rows of maize are planted on a mound no more than 1.8 chi wide with both the rows too close to each other and the stalks too close to each other. They shade each other from sunlight so that some plants are large and others small, with the small ones amounting to between 15 and 30 percent of the total. The ears on the small plants are small, with the result that their yields are low. The third crop is planted between the mature second crop of maize where the circulation of air and the penetration of sunlight is poor. Plants are consequently spindley and weak and are easily knocked over by the rustling maize in the autumn. So, the three sowings and three harvests is actually three sowings, two harvests, and one loss, and the role of "increased rate of land use, vigorous growth in peripheral areas, and circulation of air with penetration of light" is impossible to achieve. During the 5 years since 1973 when the three sowings and three harvests system was expanded over a wide area in Fangshan County, average annual per mu yields in autumn have decreased 11 percent, and in 1977 they decreased 20 percent.

2. As a result of the late maturation of the third crops, timely sowing of wheat is adversely affected, thereby limiting the speed of increased yields of summer grain and even creating severe reductions in yields. Increased summer yields of grain bring a great increase in farm work such



as harvesting, transportation, threshing, and stacking of wheat, all of which should be completed within 10 or 15 days after which the third crop has to be sown on the land formerly occupied by the wheat. Time is short, there is much work to be done, and machinery cannot be used. As a result, the third crop frequently cannot be planted in time, so it matures late thus delaying the planting of wheat again. In 1976 the autumn cold that gripped the entire city caused either late ripening or no ripening of the third crop. Even though our county cut down a large amount of wheat that did not ripen, it still planted close to one-third the amount of late wheat. During the succeeding year, when the wheat stalks were thin and weak and when another cold spell occurred in the spring, a large number of young plants died, causing a severe reduction in yields.

3. The old three sowings and three harvests has raised agricultural costs and reduced earnings. During the 4-year period from 1974 to 1977, agricultural expenditures throughout the entire county (exclusive of accumulation funds, public welfare funds, tax funds, or depreciation of fixed assets) averaged annually 40.44 million yuan more than in 1970, while agricultural income averaged annually an increase of only 33.32 million yuan for an expenditure of 7.12 million yuan more than income. Per mu yields in our county far surpassed those of the advanced Nanhanji Brigade with yields per mu of 1648 jin in 1976. Agricultural income for the whole brigade amounted to 219,680 yuan, with total agricultural expenditures of 143,811 yuan. Net agricultural earnings amounted to 75,878 yuan, which was only one-third of 1977 agricultural expenses. In 1977, owing to low temperatures that caused decreased yields, net agricultural income dropped to 7,621 yuan, with each person in the brigade receiving only 7.60 yuan agricultural income for the year. The Nanhanji Brigade is an advanced brigade in our county with strong leadership, vigorous membership, and high yields, yet it derived no economic benefit from the system of three sowings and three harvests. Their current annual income per person is 180 yuan, most of which derives from income earned by sideline enterprises that the brigade runs. In the entire county there is absolutely no other brigade in the situation of the Nanhanji Brigade that can obtain high yields from the three sowings and three harvests system. Just what the incomes are of other commune members who depend mainly on agricultural income may be imagined.

4. Because of the interplanting under the old three sowings and three harvests system, existing farm machinery could get into the fields to operate only with difficulty. The three summer jobs (planting, harvesting, and field management) and the three autumn jobs (harvesting, plowing, and sowing) make these seasons the most hectic for farm work. Since most work in the fields must be done by hand, even though the labor force is large, most production units must stop all of their sideline occupations to concentrate their labor forces on the three summer jobs and the three autumn jobs. I feel that the promotion of the system of three sowings and three harvests works to delay the advent of the mechanization of agriculture, adversely affects the mobility of farm labor, and prevents development of many undertakings.

In 1978, some communes and brigades in Fanshan County made some appropriate reforms aimed at the existing problems in the system of three sowings and three harvests. The whole county interplanted two crops of wheat and maize on 4 and a half chi plots over an area of more than 110,000 mu, and wheat and maize in two crops were planted on 70,000 mu, with the middle crop of maize under the old three sowings and three harvests system being changed to sweet potatoes for planting over 10,000 mu. This has been termed the new three sowings and three harvests. Thus, the old three sowings and three harvests system was done on less than 40 percent of the land. What with the general use of improved varieties, fine weather, and proper management, the average per mu yields for the entire county increased by 117 jin over the highest yields heretofore. The highest per mu yields were 807 jin, and autumn grain yields exceeded for the first time the 1970 mark of 437 jin per mu, attaining 476 jin per mu.

In 1978, the Doudian Brigade in our county revised planting methods on its 4200 mu of grain fields, planting 1400 mu in two crops of wheat and maize on wide rectangular plots for an average per mu yield of 1473 jin, or a 21 percent increase over the yields under the three sowings and three harvests system. They used the BJT-6 superior maize dibbler produced by the Shijiazhuang Farm Machinery Plant and the 2BZ-6 universal machine seeder to sow "Jingzao No. 7" seeds, which are also a variety currently used in Beijing. By changing only the farming system, they derived increased yields upward of 20 percent, increased the labor productivity rate 5-fold, and reduced agricultural costs by 18 percent. At the same time they brought farm machinery into play, thereby reducing the intensity of labor by commune members. It may be said that they killed many birds with a single stone. The Doudian Brigade not only harvested two crops planted on flat land, but also harvested 1100 mu of the new three sowings and three harvests, of which 800 mu was in sweet potatoes instead of maize as the middle crop, and of which 300 mu was in sweet potatoes instead of maize as the third crop. These reforms have demonstrated a great potential for increased production through a system of planting sweet potatoes as the middle crop. The Doudian Brigade's 800 mu of sweet potatoes as a middle crop and maize as a third crop produced an average 792.9 jin of autumn food harvest per mu, for an increase of 249.6 jin per mu over the autumn harvest under the old three sowings and three harvests system, or a 45.9 percent increase. In 1978, as a result of reforms in the farming system over more than 60 percent of the land belonging to the Doudian Brigade plus general use of improved varieties and an improved level of scientific management, per mu production for the entire year was 1,232 jin, an increase of 475 jin over 1977 or a 25.5 percent increase over the highest yields recorded. Aggregate production for the entire year increased by more than 173 jin, bringing increased earnings of more than 200,000 yuan with each commune member receiving 123 yuan for an increase of 40 yuan (or 54 percent more) than in 1977.

The reform of the farming system in Fanshan County shows that when the production brigades are allowed to take the initiative while acting under the unified guidance of the state agricultural plan, and when they are

permitted to carry out a farming system that takes account of local conditions and is suited to the subjective and objective conditions obtaining in the brigade, large increases in yields are possible with increased production and increased income. This year, the agricultural leadership departments of Beijing Municipality, acting in the spirit of the Third Plenary Session of the 11th Party Central Committee, has changed the former method of "solving all problems with a single stroke" in their leadership of agricultural production and have brought out into the open the question of the promotion of the three sowings and three harvests to permit each area to make reforms and to experiment. The results of last year's reform to the planting system have been included in the "Anthology of Accomplishments in Agrosience Research and Promotion in the Beijing Suburbs for 1978" for consideration by all suburban districts. I see this as a good sign. As for the question of reform of the farming system in Beijing Municipality, we must make realistic reforms based on the subjective and objective conditions obtaining in each area after hearing the views of the broad masses. We absolutely must not command conformity or again "solve problems with a single stroke," otherwise the development of production will be greatly disadvantaged.

9432

CSO: 4007

BRIEFS

**NEW CHICKEN FEEDS BOOST PRODUCTION**--The Feeds Company of Fangshan County of Beijing Municipality has successfully helped local chicken farms to produce better chickens and more eggs by adding vitamin supplements and mineral additives containing small amounts of calcium and phosphorous and by varying the mixture of feeds to suit the needs of different types of chickens and according to their growth conditions and according to the seasons. During the first four months of this year, using the new feeds, just the 6 mechanized or semimechanized chicken farms in this county alone turned over or sold to the state more than 150,000 jin of eggs, which was equal to the total amount of eggs procured in the entire county during the same period of last year. In the first five months of this year, the county turned over or sold to the state 4,000 meat chickens, which was 10 times that of the same period of last year. This company has been producing the new feeds since last October. [Beijing BEIJING RIBAO in Chinese 18 Jul 79 p 2]

CSO: 4007

## IMPROVING GRASSLAND IN HEILONGJIANG SAID URGENT TASK

Beijing GUANGMING RIBAO in Chinese 11 Apr 79 p 4

[Article by Fan Yuexing (0416 1878 5887): "Grassland Construction Must Be Grasped Well"]

[Text] The great grassland of Heilongjiang Province comprises the Hulunbuir meadow and the Sungari-Nun meadow. In addition, there is the intermontane wasteland in the Greater and Lesser Xingan Mountains. The grassland here spreads out over a wide area and the topography is level. Grass grows plump and in abundance, and the alkaline grass produced here is known at home and abroad. In the entire province there are 150 million mu of grassland. If we take into account the intermontane meadows and reclaimable wasteland that are in the process of being utilized, then there are upward of 300 million mu. This is a great natural treasure. In the past few years, however, good grassland has been reduced in area considerably, grass has deteriorated in quality, the animal-holding capacity has been lowered, and livestock production has dropped substantially. Opinion is divided on the causes of degeneration of the natural vegetation of the grassland. Below, I present some personal views on the basis of my own observations and analyses of diverse data in the past 30 years.

I. Concerning the clearing of forests. Heilongjiang Province has an area of 1 billion mu, of which forests constitute 450 million mu. In the early days following the liberation of the country, forests almost abutted on the grassland, and from the Greater and Lesser Xingan Mountains to the northern tip of the Wanda mountain range there were vast areas of virgin forests. These have played an important role in regulating rainfall and in impounding water and conserving soil moisture. After many years of deforestation, the virgin forests have now gradually diminished. The front edges of the forest belts have moved back to the fringes of the steep mountains, as the laying out of secondary forests and artificial forests lagged behind the speed of deforestation. Areas where forests used to border on the grassland are now several hundred li away from the grassland. Owing to the reduction in area of the forest floor, the ecological environment has undergone a gradual change. The dry season has been lengthened and mountain streams have run dry, with the result that pasture grass can no longer grow luxuriantly.



II. The question of inadequate water sources. There are in Heilongjiang Province over 2,400 big and small rivers. In the past when these rivers burst into a flood, the arid meadows would rely on it to irrigate them and also to play a part in their fertilization. By means of the rising and falling of these natural water currents, a great many virgin meadows have developed and grown. For example, over 10 grassland-countries in the western part of Heilongjiang Province, including Fuyu, Dumeng, Lindian, Qinggang, Lanxi, Mingshui, Anda, and Shaodong, have all accepted "favours" bestowed by the Wuyuer River as well as waterlogging from its flooding. The Wuyuer is a river with no end. Its upper reaches originate in the Lesser Xingan Mountains, but in the middle and lower reaches there is not only no river course, but also there are no terminal branches. It used to become a vast expanse of water during the flood season. Every year, between summer and autumn, the meadows along its banks were irrigated once, and this relieved the spring drought of the following year. Today, six medium-sized reservoirs have been constructed in the upper reaches of the river, each capable of storing up to 1,000 cubic meters of water. This impoundment of river water has gradually turned between 20 and 30 million mu of meadows into an arid grassland.

III. Climatic influences are also an important factor. Heilongjiang Province has a continental climate. Every year, spring drought is followed by summer waterlogging. Rainfall is too concentrated. The sprouting stage of plants often meets with a drought. Generally, precipitation is very different within the province, ranging from over 200 millimeters in some places to 600 millimeters in others. The Hulunbuir and Sungari-Nun meadows belong to those areas with little rainfall, but the annual evaporation rate there is about 1,500 millimeters, which is three times the amount of rain. According to an investigation conducted by the meteorological department, the climate of the grassland was relatively wet in the 1950s and 1960s, but since the beginning of the 1970s, rainfall has dropped, flood discharge and sedimentation have decreased, and the drought situation has become increasingly severe. According to the weather records in some places, when the annual rainfall was below 300 millimeters, the growth condition of grass was very poor and the commercial grass crop was bad, but when the annual rainfall was in excess of 500 millimeters, the growth condition of grass was good and there was a bumper harvest of commercial grass. In recent years, annual precipitation in some banners in the Hulunbuir League has not exceeded 200 millimeters. For several years in succession, no penetrating rain has fallen on the meadows there, so that the grassland has dried up and become sandy and rat infestation has been serious.

The growth condition of the natural vegetation of certain meadows is closely related with agriculture, forestry, water and climate. According to a survey conducted in the early 1950s, everywhere one traveled on the Hulunbuir and Sungari-Nun meadows, be it close by a village, around a lake, or in open country, one could see wide stretches of ponds grown with grasses. Then the plant communities were distributed as follows: On all sides of water bubbles [3055 3133 1311] were alkaline garland chrysanthemums, in

swampland were reeds, on rolling hills was alkaline grass, on the low-lying flat land were alkaline grass and small reeds, and on the sand dunes was (?couch grass) [5038 5403 5548]. The rest was weeds. Vegetation was luxuriant. Nowadays, such sights as this are seldom seen.

Instead, alkali spots on the meadows have increased in number, grass has thinned, isolated trees have dwarfed, and the specific gravity of forage plants that can be fed to livestock has dropped considerably. According to a survey of seven grassland-counties in the Nunjiang Prefecture, the average per mu yield of hay in the grassland there was 400 jin in 1963, but in 1974 this has dropped to about 150 jin. This shows that environmental changes have brought about obvious degeneration of the grassland.

IV. Exploitation and utilization have been carried out not in accordance with the principle of laying stress on farming, forestry and animal husbandry simultaneously, but one-sidedly, thus violating the objective laws. At present, every time one goes to an agricultural area in the grassland, one almost cannot find a piece of pasture land that is managed in a planned way. In the semi-agricultural and semi-pastoral areas, some land has been reclaimed by digging up the grass or by clearing the forests. On the land thus reclaimed, due to a thin soil layer and low fertility, the per mu production of grain is only about 100 jin, which is the same as the original yield of grass. In some places the grain production is even less than that. In the seven grassland-counties of the Nunjiang Prefecture, there were in 1963 14.23 million mu of grassland that could be utilized. By the end of 1977, land reclaimed from the grassland amounted to 4.25 million mu, constituting about one-third of its original area. As a result, big livestock were reduced in number, the growth condition of grass in the remaining meadows took a turn for the worse, and grass species fit to be eaten by domestic animals dropped from 50 percent to a mere 20 percent. The livestock industry in the pastoral counties is being squeezed by agriculture. No reclamation has been carried out on large tracts of land in some pastoral areas, but because wells have not been dug and ditches not been opened to draw water for irrigation, the meadows are dry and production has declined. Also, grazing land and haying grounds are located more and more remote from the villages, and a great deal of the cross-banner and cross-commune nomadic way of life has emerged.

Today, the animal-holding capacity of the meadows throughout the province averages only one head per 20 mu, if domestic animals, such as cattle, sheep and horses, are all counted as sheep. On the grassy plain of Hulunbuir there is only one head per 24 mu. This absolutely cannot compare with the animal-holding capacity of pasture land in countries where livestock breeding is well developed. In New Zealand, every mu of artificial pasture land can keep 1.3 to 1.6 head of sheep.

V. The work of protection, management and construction of the grassland has not been kept up. In Heilongjiang Province, dry meadows constitute a majority. Since development was begun late, some of them still retain their primitive "virgin land" appearance. If we make no effort to carry out reforms, only

depend on heaven to keep the grass growing, and put animals to graze wherever water plants grow, then our animal husbandry cannot attain a steady production and a high yield. In the past few years, some pastoral areas have begun to dig wells and build ditches to draw water for irrigation. On the Hulunbuir meadows, work has begun in some places to establish forests as windbreaks and for fixing of the sand. This is a very good beginning. In the Hulunbuir League there are meadows with a total area of over 22.5 million mu which are deficient in water. Among these are the nearly 1.0 million mu of grassland in the rolling region of Buerjiasi in the Chen Banner. The grass there is of excellent quality. The valley is open and broad. There are large tracts of edible forage plants, of which alkaline grass constitutes more than 50 percent and mountain peas make up over 30 percent. Each mu can also yield more than 800 jin of herbage. Because of a lack of water sources, these excellent meadows have all along not been made use of. If ditches are built to draw water for irrigation, they can become a great grassy plain that can guarantee a harvest irrespective of drought and flood. As to the state of mechanization in the grassland, it also does not truly meet the needs of construction. No matter whether it is in terms of quality or quantity, the haymakers, hayrakes, bale pilers, and maintenance and overhaul facilities do not conform to requirements. Since an animal husbandry mechanization system has not taken shape, it has not been possible to harvest the grass of the meadows year after year. Moreover, due to a shortage of means of transportation, even if there is a high yield in the heart of the remote parts of the grassland, there can be no bumper harvest. According to my understanding, all over the province about 100 million jin of commercial feed is harvested annually in times of low yield and 160 million jin at the most. Computed on the basis of the total area of the grassland, this is equivalent to buying up 1 jin of feed per mu. Such a merchandising rate is really too low.

In order to accelerate construction to bring about the modernization of the grassland, we must grasp well a comprehensive survey of grassland resources, carry out comprehensive control and utilization, and accomplish settlement of the population and rotational grazing step by step so as to turn a natural pasture into a stable high yield pasture cultivated by man. In the agricultural areas, if the conditions are there, it is also necessary to plant pasture grass and open artificial grazing grounds. In the semi-agricultural and semi-pastoral areas, simultaneously with organizing agriculture well, it is necessary to prevent indiscriminate land reclamation and reckless pasturing, and achieve construction of the grassland in a manner appropriate to local conditions. In the pastoral areas animal husbandry must be regarded as the main factor. Grassland construction, centering on Caokulun, must be stepped up. Grass output must be raised and animal husbandry production must be developed vigorously so as to supply the state and the people with even more livestock products, such as meat, milk, hide and hair, and make even greater contributions to realizing the Four Modernizations.

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## BRIEFS

**SUMMER GRAIN PROCUREMENT**--By 20 August over 1,886 million jin of summer grains had been delivered to warehouses in Hubei, overfulfilling the province's grain taxation and purchasing plan by 57.2 percent. [Hong Kong TA-KUNG-PAO in Chinese 18 Sep 79 p 3]

**HUBEI COTTON**--At present, the 8.6 million mu of cotton in Hubei is growing well. The people in Jingzhou Prefecture are now working on the late season management of cotton. Many communes and brigades in Huanggan and Xiangyang prefectures have applied additional pond manure to the cotton and basically controlled insect pests. Jingzhou, Huanggan and Yichang prefectures and Wuhan Municipality have all recently held on-the-spot meetings on the late season management of cotton. [Wuhan Hubei Provincial Service in Mandarin 1100 GMT 29 Aug 79 HK]

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## BUMPER HARVEST EXPERIENCES SUMMARIZED

Beijing GUANGMING RIBAO in Chinese 21 Aug 79 p 1

[Article by Reporter Che Bu [6375 1580]: "After the Bumper Harvest of This Year, Must Insist on Scientific Farming Even More; Jiangsu Provincial Science Commission Held Symposium To Discuss Bumper Harvest and Scientific Farming Experiences"]

[Text] The Jiangsu Provincial Science Commission held a symposium in Nanjing recently to summarize the bumper summer harvest and to discuss scientific farming experiences. The attendees included full-time scientific researchers, agricultural specialists, professors, and also part-time researchers from the agricultural line. In the symposium, the causes of the bumper summer harvest of this year were analyzed and various problems related to cultivation of high-yield variety, the high-yield action of the superior variety, high-yield cultivation technique, and how the level of scientific farming may be raised were discussed.

A bumper summer harvest was achieved in Jiangsu this year with a total yield reaching more than 15 billion jin and an average unit yield in excess of 400 jin. Both the total yield and the unit yield have set new records in history. Those comrades who attended the symposium considered that one of the most important causes of the bumper summer harvest of this year lies in the fact that the provincial commissioner and the party organizations on every level have made implementation of the spirit of the Third Plenum of the 11th Party Central Committee and popularization of the two documents concerning agriculture issued by the central government as the first priority matter, and thus mobilized the vast majority of cadres in summarizing the experiences gained and lessons learned through the development of agricultural production since the time the nation was established, combining it with the actual conditions and in further criticizing the extreme leftist roaders Lin Biao and the "gang of four." At the same time, the bumper harvest cannot be dissociated from the scientific farming techniques used. Jiangsu Province has, on matters concerning scientific farming, had a good grasp of the following main points this year:



1. They have cultivated and popularized a bunch of new wheat varieties and new species which are suitable for high yield production. Today, the area north of Huai He is planting mainly "Taishan No 1," and the area south of Huai He has popularized "Yangmai No 2," "Yangmai No 3" and "Ningmai No 3." These superior varieties achieved increased production in large area cultivation.

The agricultural scientific research units on every level from all over the province have, in order to achieve the goal of 1000-jin wheat, searched the laws governing the high-yield cultivation method of the 1000-jin wheat, and achieved substantial results through continuous and untiring effort. They have developed a brand new variety of wheat which possesses a latent potential of yielding 1000 jin. For example, a variety "Siyang 117" which was selectively developed by Comrade Yu Jingzhong [0205 2417 1813] and others of the Cotton Original Seed Field of Siyang County, has been tested continuously for 3 years in an area north of Huai He and prove that it possesses superior overall performance with combined high yield and stability. The per mu average yield reached 1,005.8 jin in 1978; the first place in that year. This variety has begun to be widely applied in the area north of Huai He and several other provinces including Shangdong, Hebei and Anhui. This year, as a result of popularization of "Siyang 117" in Donghai County, the number of 1000-jin wheat fields has increased significantly. The highest per mu yield of the entire county reached more than 1,270 jin, which was the highest record ever set in the entire province.

2. Popularization of the high-yield cultivation method which is compatible with the high-yield variety: This year, various parts of the Jiangsu Province have aggressively implemented numerous measures related to soil, fertilization and water in accordance with the characteristics of different superior varieties and their growth characteristics together with such specific conditions as the local soil condition, weather, and crop commodity, and thus firmly established the foundation of high-yield three wheats.

3. Centered around careful and intensive cultivation and strengthening of scientific management, the following reform measures have been resolutely and steadily implemented: 1) Timely sowing, shorter sowing period, and a change from late sowing to early sowing; 2) Improvement in sowing method: The area north of Huai He has changed their sowing method from manual to mechanical, while the area south of Huai He changed their sowing from broadcasting to line sowing, thus achieving uniformity in depth and interval with neat seedlings; 3) Deepening of the cultivated soil layer, changing from shallow to deep cultivation; 4) Chemical fertilizer application technique has been changed to attack both ends--namely, apply heavily the foundation fertilizer (seedling fertilizer) and apply skillfully the fertilizer to stimulate rapid growth and forming of the grains; 5) Proper sowing density. Changing from dense sowing to less dense sowing in order to achieve a harmonious relationship between the individual plant and the group, to reconcile contradiction of high-yield and bending, and to make each individual plant mature properly and thus achieve the goal of high yield.

In addition, those comrades who attended the symposium exchanged their experiences related to the matters of three wheats field management and discussed some specific problems related to achieving three wheats high yield. All are more than ever determined to liberate their thoughts one step further, to work and practice harder, and to dare try something new in order to contribute more to an effort to achieve even higher yield of the three wheats.

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BRIEFS

FOOD BASES IN SHANGHAI SUBURBS—At a rural work conference held in the past seven days by the Shanghai Municipal Party Committee, the conferees agreed that the outskirts of Shanghai should be developed during the three years of economic readjustment into nonstaple food producing bases provided these areas can first of all fulfill their grain and cotton procurement tasks assigned by the State. [Shanghai JIEFANG RIBAO in Chinese 5 Jul 79 p 1]

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## JILIN

### BRIEFS

AQUATIC PRODUCTS CONFERENCE--The provincial aquatic products work conference held by the Jilin Provincial Revolutionary Committee on 24 August was ended successfully on 31 August. Present at the conference were responsible persons of the provincial water conservation bureau, various municipalities, prefectures, autonomous prefectures and counties, state fishing farms and reservoirs, totalling more than 200 people. Mu Lin, vice chairman of the Jilin Provincial Revolutionary Committee, attended and spoke at the conference. [Changchun Jilin Provincial Service in Mandarin 1100 GMT 31 Aug 79 SK]

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